

CLAIMS

What is claimed is:

1. 1. A method comprising the steps of:
 2. providing a liquid rubber that has multiple sites of unsaturation;
 3. chemically modifying the liquid rubber's sites of unsaturation to yield alternate functionalities and thereby create a functionalized liquid rubber; and
 5. terminating a metallic or organometallic-initiated living polymer with the functionalized liquid rubber.
1. 2. The method of claim 1, wherein said liquid rubber has been synthesized with at least one conjugated diene monomer.
1. 3. The method of claim 1, wherein said liquid rubber is polybutadiene.
1. 4. The method of claim 1, wherein said metallic or organometallic-initiated living polymer is a polymeric organo-lithium.
1. 5. The method of claim 1, wherein said metallic or organometallic-initiated living polymer is poly(styryl)lithium or poly(butadienyl)lithium.
1. 6. The product produced by the process of claim 1.
1. 7. The method of claim 1 wherein said alternate functionalities are selected from the group consisting of epoxide, maleic anhydride, and alkoxy silane functional groups.
1. 8. The method of claim 1 further comprising the step of performing hydrolysis on the alternate functionalities to yield hydroxy or carboxy functional groups.
1. 9. The method of claim 1, wherein said liquid rubbers are linear or branched.

- 1 10. A synthetic polymer with at least one highly-functionalized liquid-rubber chain-end
2 moiety.
- 1 11. The synthetic polymer of claim 10, wherein said synthetic polymer is a polydiene.
- 1 12. The synthetic polymer of claim 10, wherein said synthetic polymer is selected from the
2 group consisting of polystyrene, polybutadiene, and polyisoprene.
- 1 13. The synthetic polymer of claim 10, wherein said liquid rubber is polybutadiene.
- 1 14. The synthetic polymer of claim 10, wherein said highly-functionalized liquid- rubber
2 chain-end moiety comprises functional groups selected from the group consisting of:
3 maleic anhydride groups, epoxide groups, hydrolyzed maleic anhydride groups, and
4 hydrolyzed epoxide groups.
- 1 15. A star polymer comprising a highly-functionalized liquid-rubber core and at least one
2 polymeric arm prepared by anionic polymerization.
- 1 16. The star polymer of claim 15, wherein said polymeric arm is polystyrene, polyisoprene,
2 or polybutadiene.
- 1 17. The star polymer of claim 15, wherein said core is polybutadiene.